Migrating personality theories
Part 1: creating agentic trait psychology?
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Abstract
Purpose – Pluralities of personality schemas reside across different Maruyama universes suggesting incommensurability and isolation. Schemas may migrate across Maruyama universes given appropriate means. As illustration, the Myers Briggs Type Indicator (MBTI) schema for personality temperament is migrated into a sociocognitive schema through the intermediary of knowledge cybernetics (KC). MBTI is a type approach that operates with polar opposites; however, conceptually there is no reason for it not to be associated with a trait space. Supposing that MBTI has traits at some horizon of meaning, then since traits are responsible for the creation of enduring states, sociocognitive explanations should be able to explain the stable states consistent with a variation of the McCrae and Costa proposition. As a result this paper aims to formulate for the first time a link between the MBTI type schema, a trait space, and a capacity for sociocultural descriptions.
Design/methodology/approach – The paper uses the meta-framework of KC, part of the relevantial universe identified by Maruyama, to formulate a representation of MBTI. This also appears to be the first serious use of the Maruyama universe concept, and the first time that MBTI has been explored from a relevantial perspective. A consequence is the possible development of a more sophisticated trait theory that is capable of providing more complex information about personality.
Findings – The findings indicate that a more complex form of type theory is possible than has been provided by MBTI.

Research limitations/implications – This paper is limited to the investigation of MBTI. However, it offers a generic approach that can be applied to other solitary theories like MBTI. It also postulates a trait basis for the MBTI type approach.
Practical implications – The paper leads to the possibility of improved explanatory power for a type theory than is currently possible.

Originality/value – The paper adopts for the first time a relevantial meta-framework approach to explore a development of MBTI. It has value to those researchers who may wish to explore the potential of more complex forms of type personality theory than are currently available.

Keywords Personality, Knowledge processes, Cybernetics, Type testing, Psychology

Paper type Research paper

1. Introduction
Human agency is complex, and modelling its effective functionality requires theoretical pluralism (Bandura, 2008). The plurality of personality schemas that coexist (Carver, 2005) create an uncertain fragmented horizon of schemas that are uncoordinated, competitive and together demonstrate an undeveloped theoretical understanding of the nature of personality (Sharpley, 2006). For instance, Bandura’s (1999a, b, c, p. 229) sociocognitive theory is a dynamic self-schema of personality that sees the individual as an autonomous system that interacts dynamically with its social environments. In contrast, there are trait schemas of personality like the five factor model[1] (FFM) that
tend to be devoid of contextual connection, and have a static rather than dynamic nature (Bandura, 1986).

To deal with fragmentation, some seek a “magic bullet” unique schema that can explain everything, and for Boje (2004) this would likely constitute a monistic horizon that is monophonnic in that it offers a single general narrative and at least one story. Others seek synergistic theoretical and methodological pluralism (a “horses for courses” perspective), which Boje (2004) would likely refer to as plural horizon that is polyphonic since it offers many narratives each telling its own story. These narratives often have no point interconnection and while their stories may be on a similar theme, their content reflects no relationship. Reflecting on such monism/pluralism and commenting on the distinctive natures of the five factor method and sociocognitive theory, Cervone et al. (2001, p. 36) note that:

If five-factor and social-cognitive theories of personality were closely related and could easily be integrated, then there would be no need for a unique social-cognitive theory of personality assessment in the first place. Social-cognitive principles simply could be subsumed under the theoretical umbrella of five-factor theory, as McCrae and Costa (1996) have explicitly proposed. A distinct theory of personality assessment is required only if the personality theories differ fundamentally, and they do.

It would appear that here the word distinctive refers to a coherent and embracing theory, though not necessarily all-embracing. But however fundamentally different the two approaches are, might a variation of the McCrae and Costa proposition have some validity: that trait theory can be created to have sociocognitive explanations? This paper will ultimately show that a variation of the McCrae and Costa proposition is quite feasible.

The underlying problem is that personality is complex, and normal science (Manuel-Navarrete, 2001) approaches are inadequate to represent it. Normal science operates through schemas that use isolated partitions of knowledge that use their patterns to create narratives and tell stories. The schemas provide an underlying organizational pattern, structure, or conceptual framework of knowledge, and the patterns are an ordered experiential stock of knowledge that provides cognitive relevance for narrative. There are three interactive classes of relevance (Schutz and Luckmann, 1974, p. 228): thematic relevance occurs when a narrative (with its own subject characteristics) can be expressed, and determines the constituents of an experience; interpretative relevance occurs when the narrative can create direction by the selection of relevant aspects of a stock of knowledge; and motivational relevance occurs when consideration of the narrative causes a local conclusion through action. Schemas may begin through thematic relevance as simple conceptual classifications that can arise from qualitative or quantitative observation, but by engaging with interpretive and motivational relevance can develop into theories with predictive capability and even (with the formation of adequate normative modes of practice) paradigms.

In contrast to normal science, post-normal science is concerned with complexity and has interests that relate to uncertainty, assigned values, and a plurality of legitimately argued perspectives. These attributes may be referred to as antenarrative (Boje, 2001), from which narratives may arise, and where a plural collective co-construction of multiple voices develop, each with a narrative fragment and none with an overarching conception of the story that is becoming.
The use of normal science is likely to be inadequate for the social sciences (Manuel-Navarrete, 2001), where the plurality of narratives are unable to account for the whole of a thematic reality. This also appears to be the situation in the thematic domain of personality research, where each schema operates as a distinct and unconnected narrative resulting in a cacophony of storytelling.

The paradigm of knowledge cybernetics (KC) provides one entry into post-normal science, with cybernetic meta-rules that can seek and manifest an implicit orchestration in pluralities of knowledge. The creation of a comparative examination of different theories requires that they can be expressed in relatable terms of reference. Here, KC acts as a comparative platform for different schemas capable of contributing to the exploration personality. The methodological constraints for doing this are well explored (Yolles, 1999a, b). KC is a theoretical platform that arises from principles of cybernetics and knowledge processes, and is formulated as a theory of context, using context forming knowledge that leaves open a capacity to create formal understandings about distinct situations. It explores knowledge formation and its relationship to information, and provides a critical view of individual, social knowledge, and processes of communication and associated semantics.

The intention in this paper is to use KC as platform to explore Myers Briggs Type Indicator (MBTI), and show that it can be expressed in sociocognitive terms. To do this it will need to alter the MBTI narrative while maintaining and extending the core story. Such an approach suggests that it may well be possible to address the current distinctions between different classifications of personality theory and their competitive positions. This study will be extended in Part 2 of the paper by exploring the possible relationship between MBTI and Maruyama’s (2001) sociocognitive mindscape theory, normally considered to be competitive approaches.

2. Distinguishing classes of schema

There are a variety of ways of distinguishing between different schemas. For instance, Cervone et al. (2001) discuss temporal (Aristotelian static and Galilean dynamic) and structural (top-down/hierarchical and bottom-up). An alternative is offered by Maruyama universes which, unlike the discontinuity of the orthogonal temporal and structural typography, provide a classificational continuity through which to explore distinctions between personality schemas. To satisfy our variation of the McCrae and Costa proposition referred to earlier, we shall show that the migration of schemas can occur from one Maruyama Universe to another. The tools to do this come from general theories, and so we shall also consider the relationship between domain specific and general schemas.

2.1 Maruyama universes

Maruyama universes can be used to classify schemas and the information that they generate. Maruyama (1965, 1972) posits three types of universe, classificational, relational and relevantial, and they each have distinct natures:

1. The classificational universe is static, consists of substances classifiable into mutually exclusive categories, and is organised into a hierarchical structure of superdivisions and subdivisions (Ionesco, 1989). Members of the universe are substances (material, spiritual, etc.) that are usually discrete and mutually exclusive, which can be classified into categories that can be combined or
divided in a way that leads from the general to the specific, and invites ranking (Meyer, 2003). A schema in this universe generates classificational information, the purpose of which is to specify categories as narrowly as possible. Stein (2007) sees that it is also object-oriented, and Judge (2006) suggests that it operates through complex paired connections that are seen through objective epistemology. FFM provides an illustration of a schema that belongs to this universe. It arises from the five factors or dimensions of personality that were discovered through empirical research (Goldberg, 1993); a descriptive schema of personality that has not yet reached the status of a theory, it is supported through inadequate post-hoc propositions that neither explains personality nor operates statistically in ways that satisfy some critics (see for instance http://en.wikipedia.org/wiki/Big_Five_personality_traits (accessed April 2008). Research indicates that there are some important relationships between its personality factors and job performance, but even so there is a need to find hard evidence that any such approaches have any real validity (McKenna et al., 2002). Another example is Eysenk’s (1957) factor analysis study of political temperament. Also, the MBTI schema that identifies a number of personality states may also belong to this universe, when the cognitive dynamics as envisaged by Jung are not made a part of its narrative.

The relational universe is event-oriented (Ionesco, 1989), being concerned with events and their interconnections rather than substances (Huchingson, 2001), with relational linkages and effects that are of importance (Stein, 2007). Since it is event and occurrence orientated, it drives the basic question of how do they relate to others (Meyer, 2003). It also maintains complex paired connections that adhere to a subjective epistemology (Judge, 2006). Jungian personality temperament theory may be seen as having an implicit relational nature. Mindscape theory (Maruyama, 1988) provides another example of this.

The relevantial universe for Maruyama (1965) is existential and dynamic in nature. It is socially connected in that it concerns individuals with shared needs and desires, and consists of individuals’ concern, about themselves, about others, about situations, relations, and about existence (Meyer, 2003). It is also interpretation-oriented, maintaining a meta-view of phenomena and able to identify redundancies and variety for a system in which there are self-organization and adaptive capabilities (Stein, 2007). Here, patterns of change are represented as well as how adaptation to them can occur. Cognitively complex, it provides for both subjective and objective epistemological perspectives (Judge, 2006), where the latter presumably result from a normative consolidation of subjective perspectives. An illustration of a personality theory that resides here comes from Jung, who sees personality is a living system that is self-organizing, self-maintaining, self-transcending, and self-renewing. Bandura’s sociocognitive self-theory is also part of this universe because of its existential nature.

Schemas that exist in different Maruyama universes tend to have different frames of reference. Thus, for example, in the specific domain of personality theory, the agentic sociocognitive self-theory has no connection with FFM (Bandura, 1986), and similarly appears to have little connection with MBTI. Such a fragmentation of theory illustrates
a lack of a deep understanding of personality. To address this, might there be a way of relating schemas across different Maruyama universes for greater schema synergy?

2.2 General and domain specific schemas

Schemas may be domain specific and tightly connected to a given theme, or general when they are seen to operate across domains. There are a number of schemas in the domain specific area of personality (Carver, 2005), and by their very nature they do not have access to general principle available in cross domain general theories. Two successful general theories are complexity theory (Kauffman, 1993), and general systems theory (Bertalanffy, 1951; Weinberg, 1975), the latter related to cybernetic theory (Wiener, 1948; Beer, 1959, 1966; Schwarz, 1997, 2002). Some sociocognitive theory has been influenced by complexity theory (Cervone et al., 2001), and while there is a recognition of the influence of cybernetics (Cliffe, 1984) there seems to be no modern application of cybernetic theory.

Some general theories have an explicit capacity to assimilate a plurality of related domain specific schemas, amplifying or honing their attributes and then reactivating them in the specific domain. Such approaches are often post-normal and post-modern, where complexity in the real world is responded to through theoretical and methodological pluralism in contrast to domain specific schemas that are more limited (Francis, 2006; Midgley, 2003; Manuel-Navarrete, 2001; Sellamna, 1999; Funtowicz and Ravetz, 1992, 1993, 1994). So there is often a need to attempt to relate the horizon of fragmented schemas using constructivist approaches that establish inclusive capabilities of knowledge production. Sellamna (1999) argues that theoretical and methodological pluralism is an essential requirement that rejects the hegemony of any single mode of knowledge production.

One boundary across which personality research tends not to cross is the post-modern theoretical pluralism that sees the individual itself as a plurality of social constructions “none of which has a unique claim to truth” (Bandura, 2008, p. 21), an idea put more generally by Dempster (1999).

The ability to migrate domain specific schemas to general ones requires not only an appropriate means, but also that the general and domain specific schemas are not, as Kuhn (1970) might have it, incommensurable. Incommensurability between two theories occurs when they are either non-coextensive and/or qualitatively dissimilar (Yolles, 1999a, b). Coextensivity occurs when two theories occupy the same spaces of conceptual extension and have empirical referents that can be measured on a common platform. Qualitative similarity refers to the capacity to create measurements of empirical referents for concepts that are qualitatively similar, when they can be measured on the same scale of values. As an illustration of this, consider for instance Bandura’s sociocognitive personality theory of self, which most inquirers would consider to be incommensurable with the MBTI schema.

The linking of two specific theoretical frameworks can only occur when an intermediary framework is used with at least implicitly coextensive propositions, i.e. when there are no explicit conceptual contradictions. Such an intermediary framework is often a general theory that has well-defined propositions. In other words, where there are limitations in the domain specific theory because its terms of reference have not addressed certain types of conceptual extension, then the general theory can often provide conditions that can enhance aspects of the specific theory. We refer to the creation of such conditions as theory migration, a process that occurs when the
symbolic capacity of a domain specific schema can be manifested in another more
general one. The migration process can result in the development of new domain
specific theory that will need an exploration of qualitative similarity. An extended
argument supporting this view is provided by Wong et al. (2008).

3. Knowledge cybernetics as a general theory
KC has a philosophical base with the following constructionist axioms (Yolles, 2006):

- Knowledge is the result of cognitive processes;
- Cognition is an adaptive process that enhances the viability of behaviour for
given a given environment;
- Experience becomes meaningful through cognitive processes;
- Knowing is created through biological/neurological as well as social, cultural and
language-based interactions;
- Autonomous cognitive entities have their own cognitive processes and maintain
distinct ontological topologies;
- Autonomous cognitive entities create local knowledge; and
- Local knowledge cannot be transferred between two autonomous cognitive
entities; a communication topologically translates signs and symbols from one to
the other that catalyses the creation of local knowledge.

It operates through an ontology that operates through three domains of being. These are:

1. Phenomenal, involving structured objects or events in interaction, the
perception of which is conditioned by a cognitive knowledge-based frame of
reference. It is locally cognitively. Phenomena (as opposed to noumena) are
truthfully experienced.

2. Noumenal, involving rational, symbolic or logical relational images that are
constituted by coordinated un-integrated images or system of thought that
relate to phenomenal reality and connect with purposefulness; it is local to the
experiences of the perceiver and involves interpretative rightness; images of
value and belief are maintained, partly represented through ethics and ideology.
The domain is conditioned by a cognitive knowledge-based frame of reference.

3. Existential, involving beliefs and concepts and their patterns held in
worldviews. They establish a frame of reference and determine what is
known and their related meanings; these condition the virtual noumenal
images, provide substance for them, and support the sensory capturing of
phenomena.

KC can be represented as a cognitive geometry that is context forming (Bellinger, 1996;
cited in Yolles, 2006) using metaphor as a means of development. There is always a
possibility of connecting it with relatable commensurable approaches, or at least those
approaches that maintain at least implicitly commensurable conceptual extensions.
It can operate a theory of contexts by creating a recursive modelling process, an
illustration of which we shall provide in due course.
An illustration of the geometric nature of KC is shown in Figure 1 using the social viable system (SVS) model. An agent may be seen as a system (and its accompanying virtual system and metasystem) with its own purposes and processes of self, or a social with normative processes and collective notions of self. The model is cybernetic in nature, thereby centring on communications and control between the different levels. It is also context sensitive, where the nature of the ontological collection of domains can change with context.

The three domains of the SVS schema are analytically distinct classifications of being, and they each have properties that are manifestations of knowledge (Yolles, 2006). Originally set-up for socials, the basis for this model is explained by Yolles and Guo (2003). Expressed in terms of Schutz and Luckmann’s (1974) classes of relevance, the existential domain has thematic relevance that determines the constituents of an experience; the noumenal or virtual domain creates direction through the selection of relevant aspects of a stock of knowledge to formulate a system of thought, and it could be made enhanced by involving feeling; and the phenomenal domain is associated with action. The notions of conscious, subconscious and unconscious derive from Freudian psychology, are connected to the ideas of Wollheim (1999), and also related to the ideas of organisational psychology as promoted, for instance, by Kets de Vries (1991) resulting in a psychology of the collective, and by Bridges (1992) who talks about the organisational character as a representative of a social personality. Yolles (2006) also discusses the relationship between the individual and social, and notes that a social can develop a collective psyche that operates through normative processes. As such we can adapt the Bandura terminology, and refer to agentic psychology, with broad consistency in approach for individual and social psychology. The idea of influence arises from patterns of knowledge that drive understanding, interest relates to information processes and ideate models of thought, and purpose relates to empirical action.

![Figure 1. SVS schema for an autonomous agent](image-url)
In Figure 1, we have also referred to the Jing-Qi-Shen which separates between three types of energy available to human and material systems. These are the Jing-Qi-Shen energies[2] that theorize and explain the human physiological system and the fundamentals for all facets of life and its many variations (Liang and Wu, 2001). Normally, Jing is taken as the essence of material-life is a coarse physical energy, Qi (or Chi) is an energy that we may see as psycho-physical in nature, and Shen is the spiritual life force energy. As such the Jing, Qi and Shen are inseparably linked with each another.

The dynamic nature of KC arises from the theory developed by Schwarz (1997, 2001, 2002, 2003). Schwarz (2002) identifies a set of principles absorbed into KC, that identify three inseparable primal categories present in all systems:

1. There is a connection between objects, relations and wholes;
2. Every dynamic system consists of a dual principle governing change, a drift toward disorder and a capacity to increase order (and complexity) through self-organization; and
3. As the complexity of the system increases and operational closure[3] develops that can lead successively to self-organization, self-production (autopoiesis), self-reference and autonomy in durable viable systems.

Self-organization is the source of morphogenesis within which structures change, autopoiesis is the source of the overall coherence of the living organisms, and self-reference is at the root of consciousness (Figure 2).

KC concerns viable systems that should be seen as complex and adaptive, and able to maintain a separate existence within the confines of its existential or other constraints. Viable systems should have at least potential independence in their “self-processes” for regulation, organization, production and cognition. Schwarz notes that viable systems can pass through processes of emergence and evolution towards complexity and autonomy, though autonomy does not mean that there is no interactive influence from its environment. This occurs through the development of: patterns of self-organization that accommodate phenomenal change through morphogenesis and new forms of complexity; patterns for long-term evolution towards autonomy; and patterns that lead to systems functioning viably through their capacity to create variety and indeed necessary of requisite variety that enables the system to respond adequately to its environment (Ashby, 1956).

A partial illustration of the dynamic nature of the SVS is shown in Figure 2 and explored in Table I, and is based on the work of Schwarz (1997). It has also been expressed in terms of Piaget’s notion of operative and figurative intelligence (Piaget, 1950, 1977; Yolles, 2008), and orientated towards personality.

The three domains indicted may have distinct referents, depending on their context. For instance, given the context of a behavioural system that interacts empirically with its environment, the phenomenal domain may be data related, the noumenal domain information related, and the existential domain knowledge related. However, if the context is a personality that has cognitive processes that are information related, then the phenomenal domain may be connected with information structures that have been created through decision, the noumenal domain may be connected with information-based models, and the existential domain with collections of information.
Autogenesis may be seen as a second order form of autopoiesis that concerns self-creation, and can be thought of as a network of principles that enables autopoiesis. It also connects identity with self-processes, a notion indirectly supported by Markus and Nurius (1986) who proposed a theory of “possible selves” which explains how the individual develops a connection between present self, motivation, behaviour and possible or future self. Also, in identity process theory (Breakwell, 1986, 1988; Sullivan, 2000; Twigger-Ross et al., 2003) the conceptualisation of identity is seen to involve four distinct principles of identity (self-esteem, self-efficacy, distinctiveness and continuity) that together enable the maintenance of a positive self-view.

The nature of tropic drift is explained by its entropic, information and referential dimensions. With entropic drift there is a movement towards uniformity, with the development of a stabilising cycle through which arise vortices and a process of...
Table I.
The nature of viable cognitive agents

<table>
<thead>
<tr>
<th>Domain activity/ontological relation</th>
<th>Conceptual occurrence</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenomenal activity</td>
<td>Structure</td>
<td>Agent self-organisation produced through relational networks, social interconnections, objects and tokens, fluxes of energy phenomena</td>
</tr>
<tr>
<td>Phenomenal activity</td>
<td>Morphogenesis</td>
<td>Emergence, replication, regeneration, transformation, evolution of destruction of cognitive structures. This is indicated by the autopoietic loop and within the energetic constraints. Positive feedback is especially important. Relationship between phenomenal impact and social/environmental responses highlighted. It connects to the flow of time, entropic drift, global trends toward the probable and to internal and external dissipation</td>
</tr>
<tr>
<td>Ontological relation (autopoiesis) creating operative intelligence</td>
<td>Phenomenal exchange recycling</td>
<td>This represents the cognitive metabolism, energy fluxes, matter and signals ensuring physical processes, and social perennity and stability</td>
</tr>
<tr>
<td>Ontological relation (autopoiesis) creating operative intelligence</td>
<td>Feed-forward autopoiesis</td>
<td>Production of cognitive/psychic structures and behaviour, from cognitive networks, and networks of structured information and misinformation</td>
</tr>
<tr>
<td>Ontological relation (autopoiesis) creating operative intelligence</td>
<td>Feed-back autopoiesis</td>
<td>An autopoietic dialogue can create operative intelligence, and is a reflection of the capacity to reflect decision models images phenomenally. Regeneration of the relational networks through agent behaviour, influenced by: (a) motivational pressures satisfying cognitive need (like rituals, power, honour, money), (b) social/environmental pressures</td>
</tr>
<tr>
<td>Noumenal activity</td>
<td>Networks</td>
<td>Logical relations that ultimately define cognitive structures and perceptions of social structures. These are constituted as virtual information-based images that create self-perceptions of phenomenal activity</td>
</tr>
<tr>
<td>Noumenal activity</td>
<td>Homeostatic loops</td>
<td>Complex organisation of logical relations defining the cognitive being as a functional unit. Globally homeostatic cycles and hypercycles creating viable co-evolution between agent behaviour and the corresponding relational network like the pattern of myths</td>
</tr>
<tr>
<td>Ontological relation (autogenesis) creating figurative intelligence</td>
<td>Feed-forward autogenesis</td>
<td>Patterns of social elaborator knowledge (Yolles, 2006) exist that create what Piaget called figurative intelligence, and can be used to project identity. In the cognitive personality, the knowledge is constituted as patterned coherence in information gathering. The nature of figurative intelligence may be extended to include the metacoupling that occurs between cognitive being and the autopoietic dialogue. It is responsible for the influence that is created by the network of cognitive principles that define “I” and result in the agent’s own rules of production</td>
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</table>
phenomenal recycling. It contributes to the creative cycle of self-organisation and morphogenesis. With information drift towards complexity, the formation of a stabilising cycle of self-regulation leads to homeostasis. It contributes to a creative cycle of self-production through autopoiesis. Referential drift intensifies self-reference and integrates differences. With the creation of identity and the emergence of consciousness, this results in existential drift towards being. It has a stabilising cycle of existential self-reference, and a creative cycle of self-creation through autogenesis.

In his theory of knowledge, Piaget (1977) was concerned with operative and figurative aspects of child development. As such the terms operative and figurative intelligence have arisen (Demetriou et al., 1998), with which autopoiesis and autogenesis[4] can be connected. According to Piaget, operative intelligence frames how the world is understood and where understanding is unsuccessful operative intelligence changes. Operative intelligence is concerned with the representation and manipulation of the transformational aspects of reality, and involves all actions that are undertaken so as to anticipate, follow or recover the phenomenal transformations. It also refers to highly integrated and generalised sets of actions that are adaptive in nature (Schoenfeld, 1986). It can thus be thought of as the effective capacity to create a cycle of activity that manifests virtual images phenomenally. In contrast, figurative intelligence involves any means of representation used to keep in mind the states that intervene between transformations that inform perception and mental imagery. Figurative intelligence is responsible for the representation of reality, and derives meaning from its operative counterpart. It is concerned with the past. It is related to operative intelligence which rather refers to the present and future. Hence, figurative intelligence refers substantively to the patterns of knowledge that drive autogenetic processes.

<table>
<thead>
<tr>
<th>Domain activity/ontological relation</th>
<th>Conceptual occurrence</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback autogenesis</td>
<td></td>
<td>Figurative intelligence involves the metacoupling between the autopoietic dialogue (operative intelligence) and the cognitive outcome of the dialogue. Personality creation, regeneration, evolution or cognitive transformation can continuously develop affecting figurative and operative intelligence</td>
</tr>
<tr>
<td>Existential activity</td>
<td>Being</td>
<td>Cognitive being as an existing whole. Its degrees of autonomy, coherence, and identity (teleonomy) increase with its complexity</td>
</tr>
<tr>
<td></td>
<td>Self-referential loop</td>
<td>The cognitive entity emerging from the dialogue between its phenomenal self and its own image through its operative intelligence. The closer the phenomenal structures (objects) are to the images, the greater its harmony and autonomy. This is like saying that an agentic personality is more balanced if its own perception of self is consistent with that of others</td>
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Table I.
4. Understanding Myers-Briggs Type Indicator

Jung developed his model of personality temperament in the early 1920s. In this personality differences that naturally occur are constituted as temperament types. According to Ryckman (2004) Jung’s theory models personality as a dynamic and organized set of characteristics possessed by a person that uniquely influences his or her cognitions, motivations, and behaviours in various situations. By cognitions are meant the capacity for information processing through an individual’s set of psychological “functions” and/or their related conceptual connections, and by behaviour is meant the actions or reactions of cognitive individuals in relation to what they perceive within their environment. The behaviour may be conscious-unconscious, overt-covert, or voluntary-involuntary. Temperament theorists (Myers et al., 1998) who refer to behaviour in this context are often interested in decision-making behaviour that connect with the mental function of judging that leads to overt behaviour. Here, seemingly random variation in individual behaviours is seen as orderly and consistent due to distinctions in the ways they prefer to use their perception and judgment. Other theoretical approaches like those of trait theorists (Heinström, 2003) or cognitive theorists (Baron, 1982) often tend to be concerned directly with overt behaviour where judgement is not part of their consideration.

In developing the explicatory framework, Jung (1923) articulates a number of propositions:

- past experience and expectations about the future influence behaviour and personality;
- individuals are capable of constant and creative development; and
- personality is an open system which is receptive to inputs and exchanges.

He considers behaviour to be a sub-system of personality, which can change as a result of inputs from, and interactions with, the external environment of the individual. Thus, the influence of others can have a significant impact on an individual’s behaviour.

Jung’s (1923) theory of personality temperament postulates two attitudinal orientations and four basic psychological functions. The attitudinal orientations comprise introversion and extraversion, which relate to the focus of attention and flow of psychic energy of an individual. Attitudes and functions are often presented through the three dimensions of human psyche:

1. extrovert and introvert as attitudes;
2. sensing and intuition as perception functions; and
3. thinking and feeling as judgement functions (Andersen, 2000).

These have been adopted into the Myers-Briggs Type Indicator (MBTI), but it further elaborates on Jung’s ideas (Coetzee, 2005) to include the functions of judging and perceiving. According to McKenna et al. (2002) this extension requires additional evidencing. The MBTI characteristics are as shown in Table II.

MBTI is a type approach, an empirical instrument that measures dichotomous preferences rather than continuous traits (Beuke et al., 2006). The distinction between the two is that types are polar positions that may be associated with traits, but in MBTI the traits are never identified. So what might be the traits that can be associated with MBTI? The schema arises from Jung’s model of personality, when he identified
<table>
<thead>
<tr>
<th>Cognitive attribute</th>
<th>Domain</th>
<th>Enantypes</th>
<th>Nature</th>
<th>Enantypes</th>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gathering information</td>
<td>Existential (gathering information)</td>
<td>Sensing</td>
<td>Preference is for sensing relating to the tangible and manifest. Concerned with data that is literal and concrete. Noticing that an object exists without its pre-evaluation</td>
<td>Intuition</td>
<td>Connected to the unconscious. Comes from complex integration of large amounts of information. Consequence is to see the bigger picture, focusing on the structured relationships and connection between facts and finding patterns. Tends to accommodate the abstract and conceptual from information that is gathered. Connected to possibilities, patterns and inherent meaning in an object</td>
</tr>
<tr>
<td>Making decisions</td>
<td>Elaborator (decision modelling)</td>
<td>Thinking</td>
<td>Involves logical and rationality. Impartial based on normatively based ethical and ideologically based belief formulated by pre-defined rules</td>
<td>Feeling</td>
<td>Involves evaluating information, and is associated with emotional responses. Connects with purely subjective perspective of situations, and orientated towards personal values. Involves subjective processes based on personal ethical and ideological grounds</td>
</tr>
<tr>
<td>Structure relating</td>
<td>Executor (structure relating)</td>
<td>Judging</td>
<td>Relates to planned processes and regulation. Highly structured, adhering to plans. Requires neatness, orderliness and pre-established structures, and settlement. Normative standards essential</td>
<td>Perceiving</td>
<td>Are flexible in a spontaneous way, seeking to experience and understand phenomena rather than to control them. Energized by resourcefulness. More interested in their surroundings than by their own intentions. Looks for the open-ended</td>
</tr>
<tr>
<td>World oriented</td>
<td>Temperament orientation</td>
<td>Introvert</td>
<td>Focus on the inner world of ideas and experiences, reflecting on thoughts, memories and feelings</td>
<td>Extravert</td>
<td>Focus on the external world and participatory activities and actions within it. It is based on the internal world</td>
</tr>
</tbody>
</table>

**Note:** They are related to KC domains, and distinguish between primary and non-primary (shaded) enantypes.
four “mental functions” and conceived of them as comprising the dimensions of a psychological space (Fudjack, 1999). To explain these functions Jung used the term enantiomodria[5], and like the notions of yin-yang that he later used in preference to this word, they may be seen as interactive states. To enable their interactive dynamics proposed by Jung, they might be seen in terms of a recursive application of Jing-Qi-Shen energies (Figure 1) following Yolles (2007a). So what are the traits?

A trait is usually seen as a distinguishing feature, characteristic or quality of a personality. Traits arise from an interaction between personality and situation (Chapman et al., 2000), resulting for instance in the interaction model of personality (also see for instance www.cultsock.ndirect.co.uk/MUHome/cshtml/psy/person5.html (accessed April 2008)). (Stevens and Rodin, 2001). In biology, the term trait has associated with it a phenotype – this being the state of a trait (e.g. the trait eye colour has the phenotypes blue and green) (www.en.wikipedia.org/wiki/Trait (accessed April 2008)). Goldberg (1993) has used biological terminology, and refers to phenotypic personality traits in considering FFM. However, the term pheno implies a biological origin rather than a nurtured one – something which raises significant questions about the nature of personality (Maruyama, 2001). Even if this were a legitimate word to use, a phenotype is the state of a trait, not the trait itself. Recalling that the mental functions of MBTI are paired enantiodromia states, to be consistent with the biological term phenotypes we shall refer to these functions as enantypes (Table II) without having to consider whether they arise through nature or nurture.

In Table II, the MBTI paired enantypes are shown across the rows, and it must be supposed that they derive from traits. The traits should be represented in the cognitive attributes column, but they clearly do not constitute traits as such. While Jung did not appear to have defined the traits from with his enantypes arise, an attempt has been made by Boje (2004) to do this, and it will be referred to again in Part 2 of this paper. It may be noted that given that appropriate traits can be found for MBTI, then it is feasible that alternative enantypes than those suggested by Jung and Myers-Briggs are possible. This could well result in an alternative model that operates with different enantypes, as will be illustrated in Part 2.

5. Migrating MBTI into knowledge cybernetics
The purpose of MBTI is to make the theory of psychological types described by Jung understandable and useful (Myers et al., 1998). The theory purports that seemingly random variation in behaviour is actually quite orderly and consistent, being due to basic differences in the way individuals prefer to use their perception and judgment, ultimately influencing behaviour. Perception involves ways of becoming aware cognitively and phenomenally. Judgment involves ways of concluding about what is perceived. If individuals differ systematically in what they perceive and in how they reach conclusions, then the rationale underpinning MBTI purports that they will correspondingly differ in their interests, reactions, values, motivations, and skills. The aim of the MBTI is to identify through its measuring instrument, the basic preferences of people in regard to perception and judgment. The notion is that the effects of each preference, singly and in combination, can be established by research and put into practical use, especially in relation to decision-making behaviour.

The Jungian enantypes of thinking/feeling have an interesting place in the broader theory of personality. This is noted when one considers for instance, Carver’s (2005)
review of personality theory, when he relates two modes of experiencing reality to each other. In one mode, decisions are made quickly and without deliberation, and in the other mode, decisions are thought through more effort. This reasoning, he suggests, provides a basis for the distinction between impulse and restraint in behaviour. Impulsive behaviour dominates to the extent that the person responds through the fast system. Constraint dominates to the extent that the person responds through the slower, more deliberative system. The impulse/constraint dichotomy depends on which mode is dominant in the person’s functioning, either situationally or by disposition. However, in discussing trait approaches Carver only refers to the FFM and not to the more theory laden MBTI. One wonders, therefore, about seeing restraint/impulse as enantypes and whether they might have a relationship to thinking/feeling.

While Jung’s exploration of the theory of personality is contained in Jung (1957-1979), the attributes of the model have been simply represented by Myers Briggs (2000, p. 9), Caroll (2003) and explored by Higgs (2001), and a summary is given in Table III. In order to establish the MBTI model systemically, we have needed to distinguish between primary and non-primary enantypes. The primary enantypes are assigned to domains in KC that indicate states of being (shown as un-shaded rows), while the shaded row is termed temperamental orientation and represents extroversion/introversion as non-primary attributes of personality that connect self to objects in the social environment. The nature of primary and non-primary enantypes is necessarily different.

The enantypes of Table II are also represented geometrically through the model in Figure 3, and we refer to this model as sociocognitive MBTI (SMBTI). It constitutes a new sociocognitive model of personality built on the foundations of MBTI enantypes. As required in sociocognitive models, it centres on information availability, processing and structures. It defines a sociocognitive agent to have an autonomous personality system that explains how the enantypes adopted by a personality can change dynamically according to sociocognitive processes. The capacity to make such changes will, as in MBTI, be restricted to the 16 stable personality states (arranged in 4 patterns of 4 stable states) that are deemed feasible in MBTI, and we shall comment on this again shortly.

MBTI in its usual mode of operation exists in a classificational universe, and interest here is to develop it into a relevantial universe. This can be done by representing MBTI within a frame of reference provided by KC. Jung sees behaviour as a part of personality. This relationship can also be seen as an operative one (Piaget, 1977), where, personality and decision-making behaviour are always effectively independent but (normally) intimately linked cybernetically through an “autopoietic” (Maturana and Varela, 1973; Schwarz, 1997) connection that operates through a network of internal processes. The linkages, however, are always susceptible to pathological breaks, and it is the nature of these breaks that determines the resulting behaviour that develops. The relationship between decision making and overt behaviour is determined by an ontological relationship with the environmental that is conditioned by introvert/extrovert processes of personality. The outcome is a model of agentic trait psychology as shown in Figure 3 where personality is seen to be a recursion (with its attendant virtual system and metasystem) within the social system. According to this model, therefore, personality plays the Freudian role, together with all the other personalities that exist with it,
of a social subconscious. The model has relevance to both individual and collective social contexts, even though modelling differences arise within each of the different contexts. It also services the base schema for MBTI, but with the enrichment of providing sociocognitive explanations of self for the rise of the enantype stable combinations that are argued to represent personality states, and which will be referred to in Part 2 of this paper.

The rise of these combinations has empirical evidence, but no sociocognitive explanation. However, such an explanation is feasible in this model. This is entailed within the detailed relationship between the paired enantypes within the KC frame of reference (Yolles, 2007a). The internal dynamics of the paired enantypes for each aspect of personality is constrained by the dynamics of the others, through autopoiesis

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Attribute type</th>
<th>Personality type enantiomers</th>
<th>Nature</th>
<th>Attribute type</th>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existential</td>
<td>Sensing (senate)</td>
<td>Involves perception rather than judging information. Preference is for sensing relating to the tangible and manifest</td>
<td>Intuition (ideational)</td>
<td>Connected to the unconscious. Comes from complex integration of large amounts of information. Consequence is to see the bigger picture, focusing on the structured relationships and connection between facts and finding patterns. Tends to accommodate the abstract and conceptual</td>
<td></td>
</tr>
<tr>
<td>Elaborator</td>
<td>Thinking (dramatizing)</td>
<td>Involves logical consequences for choices of action. Connects to judging rather than intake of simple information</td>
<td>Feeling (patterning)</td>
<td>Involves evaluating information, and is associated with emotional responses. Connects with purely subjective perspective of situations, and orientated towards personal values</td>
<td></td>
</tr>
<tr>
<td>Executor</td>
<td>Judging (fundamentalism)</td>
<td>Need planned processes and regulation. Highly structured lives, adhering to plans</td>
<td>Perceiving (pragmatism)</td>
<td>Are flexible in a spontaneous way, seeking to experience and understand phenomena rather than to control them. Energized by resourcefulness. More interested in their surroundings than by their own intentions</td>
<td></td>
</tr>
</tbody>
</table>

| Personality orientation | Introvert | Focus on the inner world of ideas and experiences, reflecting on thoughts, memories and feelings | Extravert | Focus on the external world and participatory activities and actions within it. It is based on the internal world |

Table III.
Myers-Briggs local personality type attributes with global affiliation, identifying two “universal” orientation conditions that can affect the other attributes
and autogenesis as shown in Figure 3. However, interactions between each of the paired enantypes explaining how one achieves dominance over the other in the personality can be modelled in a similar way to the sensate/ideational enantypes of sociocultural dynamics explained in Yolles and Frieden (2005), Yolles (2006) and Yolles et al. (2008). The approach is, however, too expensive to discuss here.

6. The sociocognitive trait dynamics of personalities

Figure 3 is a systemic model of personality temperament having personality attributes represented cybernetically using the broader ontological schema developed by Yolles and Guo (2003). It has phenomenal, noumenal, and existential domains of being. The phenomenal domain is concerned with structures as they occur in the system and any structure related interactions that occur with it, the noumenal with ideate attributes that occur in the virtual system, and the existential with the imperative nature of an autonomous entity that is constituted as the metasystem. This model leads to a three dimensional frame of reference within which the three primary paired enantypes are represented. In practice, each personality will display only a dominant enantype, which arises in a patterned combination with other enantypes.

The SMBTI model has two levels of logic, called foci of examination. The upper focus is constituted as the interaction between personality temperament as a noumenal attribute of the agent, and the phenomenal social collective with its social structure providing a potential to displaying behaviour. At this upper focus the interaction between the personality and the social that develops through an autopoietic connection between the agent and its social environment. This is constituted as a network of decisions that are implemented through behavioural orientation. The personality system is constituted through the primary enantypes, while the social system involves the personality’s non-primary (introvert/extrovert) enantypes. It may be noted that the transitive grey bars that cut across the ontological connectors in Figure 3 show the
possibility for a potential for malfunctioning or pathological processes (Yolles, 2007b). A brief exploration of this is model is now appropriate.

Personality temperament is modelled as three transitive (and therefore interactive) sub-systems: system, virtual system and metasystem. The system is populated by the personality enantypes of perceiving or judging depending on the nature of the personality. Whether a given personality has a perceiving or judging enantype is determined in part by the relationship that exists with the other enantypes in the virtual systems (thinking/feeling) and metasystem (sensing/intuition), and they fall into one of the feasible stable patterns identified in MBTI. It is unclear how the autopoiesis and autogenesis that arise in the personality actually influence or are influenced by these states, but in the end they couple with these states to create operative and figurative intelligences. It is also likely that they contribute to the triggering of the enantypes in a personality in a similar way to the explanation provided in Yolles and Frieden (2005) and Yolles et al. (2008) when discussing the enantiodromia of culture. This might enable a personality to adjust its enantype, resulting in the appearance of a catastrophic change (Thom, 1975; Schwarz, 2001) in the MBTI stable state. In MBTI, there are 16 possible stable combinations of enantypes states possible, and these can be assembled into four patterns (Boje, 2004; Berens, 2007). It is feasible that these patterns are in some way linked, but it is unclear whether a personality that passes through a catastrophic change will be able to move between any of the 4 pattern combinations of states. If this is not possible, then this limits the possible degree of change that a personality is capable of.

The enantypes of feeling/thinking are constituted as an image of, or system of thought about, the current judging/perceiving experiences interpreted by the personality. This provides a basis for the creation of decision-making behaviour in the social collective. The metasystem establishes within it a base of existent knowledge and conception through the enantypes sensing/intuition. It is also ultimately responsible for the autonomous definition of self, this being influenced by autogenesis, itself influenced by autopoiesis.

Connecting the personality system to the environment using a social frame of reference is accomplished by autopoietically coupling the personality system and its environment. It does this in a way that is bounded in the sense that it is defined by a group of interactive agents that together constitute an autonomous system. If the social collective is deemed to exist as an autonomous system then it requires its own (proprietary) existential domain that will have an impact on its autopoietic couple. Returning to Piaget (1977), the autopoietic connection between the enantypes feeling/thinking with judging/perceiving is constituted through operative intelligence.

In Figure 3, the individual personality is seen as a virtual domain of the social collective. This illustrates the feasibility of setting up MBTI as a sociocognitive self-theory of personality temperament. Bandura (2008), in explaining his sociocognitive theory, tells us that to be a sociocognitive agent is to influence intentionally one’s functioning and life circumstances. He identifies four core properties for this: intentionality, forthought (through anticipation), self-reactiveness (including self-regulation), and self-reflection. While these properties do undoubtedly occur in the autonomous personality agent, the nature of their consequences is always likely to be constrained in some way by the stable enantypes that the agent settles to in its stable personality state.
Normally, autonomous agents within systems theory are considered to be purposeful and/or intentional; in respect of the second characteristic, there are two forms of anticipation, cognitive and structural (Yolles and Dubois, 2001), the former constructed as a model and the latter as a phenomenal construct. As an illustration of this, in Figure 3 the cognitive model occurs through the enantypes thinking/feeling, while structural anticipation occurs with respect to the enantypes perceiving/judging. Here, for instance the enantypes of perceiving or judging constitute a personality property of an individual that predefines, by its very structure, what situations to anticipate and how to respond to them. In this way perceiving/judging are normally biased or prejudiced. It is only through autopoietic interaction that these biases or prejudices may be ameliorated. Given unanticipated situations for perception of judgment an individual is likely to be at a loss on how to respond, unless learning can quickly occur through interconnections with the enantypes thinking/feeling and sensing/intuition. Self-regulation is a normal cybernetic property of an autonomous agent, as is self-reflection that could be expressed as part of the return autogenetic process to sensing/intuition. While it is therefore possible to show that Figure 3 is not only a theory of personality temperament, it can also call on sociocognitive self-explanations. Only an indication of this will be provided here.

The link between the virtual and phenomenal domains shown in Figure 3 also requires brief explanation. Individuals tend to exhibit behavioural patterns in what they say and do, how they relate to people, and how they perform tasks or process information (McKenna et al., 2002). This connects directly to decision-making behaviour and more generally behavioural style, though it should be seen to be conditioned by context and circumstance. McKenna et al. (2002) note that in the literature a connection is often taken between personality type and behavioural style[6], and there is a tendency in the management literature to adopt the premise that consistent behavioural patterns are synonymous with personality. Thus, for instance, George and Jones (2002, p. 43) define personality as the pattern of relatively enduring ways in which a person feels, thinks and behaves, while Robbins (2001, p. 92) discusses personality in terms of the sum total of ways in which an individual reacts to and interacts with others, and is most often described in terms of measurable traits that a person exhibits.

We have already explained that the model sets up the three enantypes of personality temperament that come from their associated traits, and these are susceptible to particular self-processes. The enantypes perceiving/judging may be subject to change through processes of self-organisation, morphogenesis, and even metamorphosis. However, the latter also requires that there is also an engagement with shifts in at least the way that sensing/intuition occur, since it is during morphogenesis that the transformation of self-reference develops. There may be different ways of interpreting referential drift too. For instance, sometimes the individual may find that figurative intelligence becomes overtaken by mistaken perceptions of self, and it is here where referential drift has taken hold. Processes of the enantypes feeling/thinking are also subject to processes of self-regulation, homeostatic and morphostasis.

An illustration of the possible explanatory power of the model can be provided. Consider the connection between the virtual agentic personality and the system of the agentic personality. This operates as a constraining operative couple (Yolles, 2006) in which the feeling/thinking enantypes informs the perceiving/judging enantypes while...
the latter affects the former in a feedback process. Break the ontological couple, and feeling/thinking cannot in any way inform perceiving/judging. This could result in outlier combination of personality enantypes that are unstable, and is representative of pathological personalities. Similarly, there is a higher order couple between the personality metasystem of sensing/intuition and the operative couple. This operates to enable sensing and/or intuiting to impact on the interaction between feeling/thinking and perceiving/judging. In this case perceiving/judging is influenced either through sensing and/or intuiting (Cole Wright, 2005), or through the external environment. In the case where a pathological break occurs in both the higher order couple and the operative couple, then personality is unstable being only influenced by external influences. In this case for instance, an individual may develop what may be called an automata personality that changes according to the environment in which s/he is hosted, resulting in a highly programmable individual. This leads to non-repetitive behaviours, whose evolution is not foreseeable (Chittaro and Serra, 2004).

As far as the other interactive agents are concerned, the personality orientation of a given agent is only seen in terms of the phenomenal consequences of its enantypes judging/perceiving, this resulting from the individual’s autopoietic network of processes which results in behaviour and that therefore affects the other agents in the social collective. This suggests that there is a major distinction between the primary and the non-primary enantypes. While the primary enantypes are distinct properties of agentic personality Temperament where behaviour is constituted as decision making, the non-primary enantypes are manifestations that occur at a social focus of examination that involve the consequences of decision making. This constitutes a recursive use of the SVS model in which modelling contexts are changed.

The Myers-Briggs model is concerned with decision-making behaviour, but there is a relationship between decision making and social behaviour that may be sensitive to environmental context and conditioned by the non-primary enantypes (introvert/extrovert) of personality. In the SMBTI model while the primary enantypes have been set-up as domain states, the non-primary enantypes have a different nature. This is not a unique situation, as shown by Brugha (1998).

7. Conclusion
In the complex topic of personality, there is little likelihood of a single all-embracing theory that will be able to subsume all other theories. Rather there is a need for a plurality of schemas that each has unique penchants. However, for this to work these schemas need to be able work together systemically, and this means that there is a need for a coherent platform that can offer commensurability. It has further been argued that a plurality of schemas can benefit from principles developed for general theory, which can then engage with domain specific issues. This indeed is what Cervone et al. have done using some principles from complexity theory.

The approach here is different from that of Cervone et al., and technically more detailed. Accepting that the three types of Maruyama universes can be used to distinguish schemas, it has been argued that given the right instruments, schemas from one universe can be migrated into the others. It is during the migration process that schema incommensurability needs to be identified and responded to, thereby creating the required coherent platform. This may mean an adjustment to some of the
more peripheral assumptions or propositions of the schema during the migration process towards more complexity.

The intention in this paper was to show that thematically related schemas, which might be considered to be separate and competitive even as far as belonging to different classes of Maruyama universes, may in fact be migrated into a given frame of reference in a relevantial universe.

In an attempt to illustrate how to migrate a schema from one Maruyama universe to another, this paper has taken the domain specific theory of MBTI from a classificational universe, and set it into the relevantial universe of KC that has been formulated towards the domain specific cognitive personality. During the migration process, we have made two changes to MBTI as we manifested its core principles into a sociocognitive theory of self:

1. MBTI operates through four pairs of enantiomers that practitioners sometimes refer to as traits, and we have defined them as enantypes (taking a similar role to the biological phenotype) that arise from implicit (and so far hidden) traits.

2. Enantypes have been distinguished into primary classifications that determine the states of personality as self, and non-primary classifications that relate to social interactions.

Now, seen as a sociocognitive personality trait theory referred to as SMBTI, it has the potential of more explanatory power than is normally attributed to MBTI. Through this development of SMBTI, we have created what might be considered as agentic trait psychology.

As such we have shown that a variation of the McCrae and Costa proposition, that trait theory can be created to have sociocognitive explanations, is feasible. The detail of how trait enantypes arise in SMBTI has not been worked out in detail here, but the principle of how this occurs does exist in other indicated research. The dynamics of enantype development is constrained by the stable patterns of personality that arise in a healthy personality.

In Part 2 of this paper, we shall show how two apparently distinct and competitive approaches, SMBTI and a representation of mindscape theory, can seen established coherently onto a platform that offers schema commensurability, resulting in the likelihood of a better picture of personality than one schema alone.

Notes
1. FFM uses factor analysis to identify the five factors neuroticism, extraversion, openness, agreeableness and conscientiousness (Goldberg, 1990), which appears to be a development of Eysenk’s (1957) original approach to explore political mindedness.
2. For a definition of these terms see for instance the Tai Chi Chuan Lun (discourse) at the web sites: www.taichichuan.co.uk/information/classics_lun_commentary.html, or the Toowoomba Buddhist Centre, T’ai Chi, and www.fwbo.org.au/toowoomba/tai_chichuan.html (accessed June 2005).
3. Operational closure mans the existence of closed loops in the network of its organisational processes that are driven by system itself.
4. Piaget has talked of two cognitive functions: assimilation and accommodation (Sternberg, 1996), that may be constructed within an autopoiesis/autogenesis relationship. Assimilation appears to be related to autogenesis in that it refers to the active transformation of
information so that it may be integrated into already available mental schemes. Accommodation appears to be related to autopoiesis in that it refers to the active transformation of the mental schemes so that the attributes of a particular context may be accommodated.

5. The word enantiodromia has been used by Heraclitus, and later by Jung as a key concept used in his notions about consciousness (e.g. www.endless-knot.us/feature.html), and (from the OED online) it is the process by which something becomes its opposite, and the subsequent interaction of the two applied especially to the adoption by an individual or by a community, etc. of a set of beliefs, etc. opposite to those held at an earlier stage. For Jung, the word enantiodromia represents the superabundance of any force that inevitably produces its opposite. In particular, according to Heraclitus who also advocated the term, things tend to move toward an extreme, and then a reactionary counter movement sets in. Consequently, the word enantiodromia often implies a dynamic process which is not necessarily implied by the word enantiomer. Jung used it particularly to refer to the unconscious acting against the wishes of the conscious mind, that which is responsible for one’s thoughts and feelings, and the seat of the faculty of reason (as indicated in www.absoluteastronomy.com/encyclopedia/E/En/Enantiodromia.htm, see Jung’s (1989, Chapter 7, paragraph 294) book). Yolles (2006) uses the simpler derivative enantiomer which means a mirror image of something, an opposite reflection. It derives from the Greek enantios or “opposite”, is used in a number of contexts, including architecture, molecular physics, political theory, and computer system design. By using the simpler word enantiomer we shall not exclude the possibility of any dynamic action that may have been implied by the term enantiodromia and its connection to the idea of yin-yang interaction.

6. There is a very close connection between behavioural style and learning style (explored by Pearlman and Saakvime (1995) and Knippen and Green (1996)), which have developed from learning theory (for the individual in the famous paper by Kolb (1974) and for the group by Nonaka and Takeuchi (1995) and learning style theory (made well-known by Honey and Mumford (1986)). This connects directly with likelihood estimations for future behaviours within given contexts. Behavioural styles sometimes may classify people according to whether they are relationship or task-oriented. Direct measuring techniques can be created to assess this.

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Further reading


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